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United States Patent [19]**Katoh**[11] **Patent Number:** **5,867,872**[45] **Date of Patent:** **Feb. 9, 1999**[54] **TILT HINGE**[75] Inventor: **Hideo Katoh**, Kanagawa, Japan[73] Assignee: **Katoh Electrical Machinery Co., Ltd.**,
Kanagawa, Japan[21] Appl. No.: **856,471**[22] Filed: **May 14, 1997**[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** **E05C 17/64**[52] **U.S. Cl.** **16/337; 16/354**[58] **Field of Search** 16/337, 338, 366,
16/340, 354, 82, 85, 50, 378, 303, 330[56] **References Cited****U.S. PATENT DOCUMENTS**833,734 10/1906 Diehl 16/354
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5,269,047 12/1993 Lu 16/340*Primary Examiner*—Chuck Y. Mah*Attorney, Agent, or Firm*—Notaro & Michalos P.C.[57] **ABSTRACT**

A first rotating shaft supporting an opening-closing body and rotating with the opening and closing operation of the opening-closing body is rotatably mounted on a mounting member attached on an apparatus body side. A first friction mechanism works on the rotating shaft. A main driving gear is mounted on the first rotating shaft so as to rotate together with the first rotating shaft. A second rotating shaft is mounted on the mounting member; on the second rotating shaft a driven gear engaged with the main driving gear is mounted to rotate with the second rotating shaft. Also, on the second rotating shaft a second friction mechanism works. Furthermore, a click stop means works on the first rotating shaft.

8 Claims, 5 Drawing Sheets